

**GLACE: A Technology Demonstration Experiment for Laser Cooled
Atomic Clocks in Space**

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We have been developing a laser-cooling apparatus for flight on the International Space Station (ISS), with the intention of demonstrating linewidths on the cesium clock transition narrower than can be realized on the ground. GLACE (the Glovebox Laser-cooled Atomic Clock Experiment) is scheduled for launch on Utilization Flight 3 (UF3) in 2002, and will be mounted in the ISS Glovebox platform for an anticipated 2--3 week run. Core technologies for this and other LCAP missions are being developed at JPL. Significant technical challenges in developing a space qualifiable laser cooling apparatus include reducing the volume, mass, and power requirements, while increasing the ruggedness and reliability in order to both withstand typical launch conditions and achieve several months of unattended operation. This work was performed at the Jet Propulsion Laboratory under a contract with the National Aeronautics and Space Administration.